

ABSTRACT OF DISCLOSURE

The filtering membranes of the present invention are made from a pair of polymer films stretched in a liquid surface-active medium for the formation of crazes filled with the aforementioned medium. The crazed films are perforated and then stack together in a stretched or released state and are welded together into a sealed structure with a plurality of parallel welding seams arranged, e.g., in mutually perpendicular directions, so that a plurality of sealed cells is formed. The cells have on one side of the membrane input openings and on the other side output openings. If an input opening is in one cell, then an output opening is in the adjacent cell. Adjacent cells are interconnected only through the welding seams. Welding can be carried out by contact heating or with the use of a laser beam, or the like. The material of the welding seam has an amorphous structure. The substance captured inside the crazes may comprise a dispersion medium used for fixing dimensions of the crazes or a substance for treating the fluid being filtered. In operation, the medium to be filtered diffuses from the input cells to the output cells of the membrane through the material of the welding seams. Filtering is enhanced if the material of the seams has aforementioned crazes. In such a membrane, the total length of the welding seams on the area of 1 m^2 may reach several hundred thousand meters. The membrane possesses selectivity sufficient for separation of two or multiple-component mixtures in a single-stage process. Depending on the method used for preparation of the polymer-film surface prior to welding, the membrane filter may have efficiency from 5 to 40,000 $\text{kg/m}^2 \times \text{D}$.